

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 957 330 A2

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:

17.11.1999 Bulletin 1999/46

(51) Int Cl. 6: F42B 12/50, F42B 8/26

(21) Application number: 99830181.6

(22) Date of filing: 31.03.1999

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE

Designated Extension States:

AL LT LV MK RO SI

(30) Priority: 01.04.1998 IT FI980077

(71) Applicants:

- Lombardini, Mauro  
53034 Colle Val d'Elsa (Siena) (IT)
- Sammiccheli, Alessio  
53034 Colle Val d'Elsa (Siena) (IT)

(72) Inventors:

- Lombardini, Mauro  
53034 Colle Val d'Elsa (Siena) (IT)
- Sammiccheli, Alessio  
53034 Colle Val d'Elsa (Siena) (IT)

(74) Representative: Martini, Lazzaro

Studio Brevetti Ing. Dr. Lazzaro Martini s.r.l.  
Via dei Rustici 5  
50122 Firenze (IT)

### (54) Practice ammunition for dispersing a staining material

(57) Apparatus for simulated war games, especially for simulating the effects of an antipersonnel device, characterized in that it consists of a hollow body (1) delimiting a chamber (2) for housing an explosive body (3) and a predetermined amount of staining material (20) and/or a lightweight charge material which is thrown out together with the fragments of the shell (1) because of the very blast of said explosive body (3).

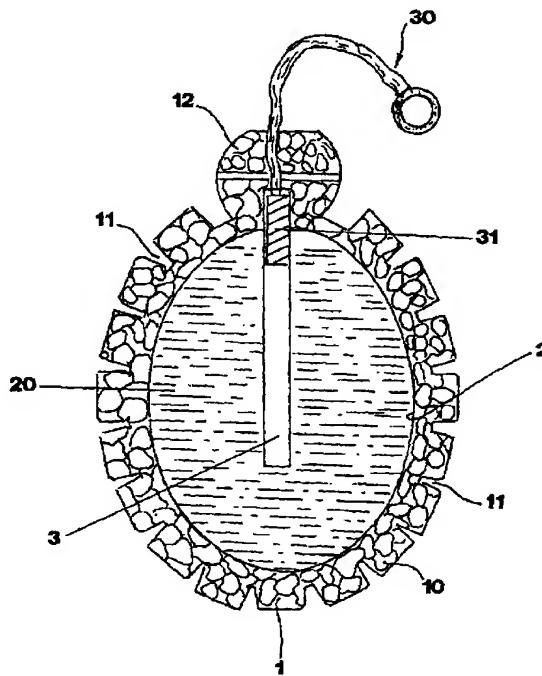


Fig. 1

## Description

**[0001]** The present invention refers to an apparatus for simulated war games, especially for simulating the effects of an antipersonnel device.

**[0002]** It is now some time since simulated war games has been practised in many countries. In particular, a remarkable acceptance have received those games in which gunfights are simulated by using gas-compressed arms able to shoot bullets consisting of small, hollow balls of plastics material which contain a staining charge intended to stain people taking part in the game. A problem so far unsolved is the one relevant to the simulation of the explosion effects of an antipersonnel device.

**[0003]** Document WO 91/01479 discloses a spray generating dye consisting of a shell containing a liquid dye in which a high-pressure gas-propellant is dissolved. Also provided inside said shell are means for firing an explosive charge. By activating the explosive charge, the shell opens up and the consequent expansion of the gas propellant determines the formation and the output of microparticles of dyeing liquid intended to stain the target by gravity. Such a device, however, results inappropriate for practising simulated war games, as the said shell must be suitably shaped and sized to resist the inner pressure exerted by the gas propellant without breaking into pieces before he firing of the explosive charge. Accordingly, the parts into which the shell breaks up upon the explosion are of such a shape and dimensions to likely causes serious damages to anybody hit by them who happens to be even at a distance therefrom. Besides, the large number of parts used for the construction of said known device and the very weight of the latter, imply a higher danger upon its use and a cost which would prevent a wide spread thereof among the enthusiasts of simulated war games. A further drawback is the fact that the dyeing material comes out very slowly from the shell. It thus follows that it is not possible to simulate with due accuracy the explosion of an antipersonnel device whose effects take place, instead, in a very short time.

**[0004]** A proposed solution for simulating the effects of an antipersonnel device provides for inserting a small explosive charge, such as a firecracker, within a shell of plastics material. It is to be noted in this regard that a device thus constructed results inefficient because of the reduced range within which the effect (exclusively of acoustic character) is felt, besides being dangerous for the players as the the fragments of the shell may hit the participants with extreme violence.

**[0005]** Moreover, the problem, not to be neglected, from polluting or non biodegradable substances is not addressed, which is instead of great importance when considering that these games are usually practised outdoor.

**[0006]** The main object of the present invention is to provide an apparatus able to simulate the effects of an

antipersonnel device and which is simple to make, cost-effective, absolutely safe for the user and of completely biodegradable materials.

**[0007]** This result has been achieved, according to 5 the invention, by providing an apparatus having the features indicated in the characterizing part of claim 1. Further characteristics being set forth in the dependent claims.

**[0008]** The advantages deriving from the present invention lie essentially in that it is possible to simulate with highest accuracy the blasting effect of an antipersonnel device, within a range of a few meters, that is, in such a range as to involve only but those taking part in the game, all this in a safe manner, without imposing the 15 use of supplementary protections, at a limited cost and with no negative impact over the environment.

**[0009]** These and other advantages and characteristics of the invention will be best understood by anyone skilled in the art from a reading of the following description 20 in conjunction with the attached drawings given as a practical exemplification of the invention, but not to be considered in a limitative sense, wherein Fig. 1 shows an apparatus according to the invention in which the shell is shaped like a grenade.

**[0010]** Reduced to its basic structure, and reference 25 being made to the figures of the attached drawings, an apparatus according to the invention comprises a shell (1) which delimits a chamber (2) able to contain a pre-determined amount of dyeing or staining material (20) and to house an exploding body (3) associated to a pull-operated control (30).

The shell (1) of the apparatus of Fig. 1 exhibits a series 30 of structural weakening lines (11) to promote and control the fragmentation of the same shell when the body (3) blows up. In any case, in regard to the homogeneous or non homogeneous structure (as explained later on), the 35 depressions (1) may also be omitted, as the very lack of homogeneousness of the material making up the shell facilitates the fragmentation thereof upon the blast of the body (3). Moreover, the shell (1) may also be of a non homogeneous construction and provided with weakening lines (11).

**[0011]** Advantageously, according to the invention, 40 said shell (1) is made of a completely biodegradable material, sufficiently resistant to shocks caused by its being thrown by the players, elastic and of limited weight in order not to hurt the players when hitting them by chance before the explosion.

For example, use can be made of a hot-agglomerated 45 granulated cork and an adhesive of animal or vegetable substances such as albumen, gluten, glycerin, potato starch and camphor, in preset doses. In Fig. 1, numeral (10) indicates cork granules. The shell (1) is easily made within a mould consisting of two impressed parts that 50 can be matches prior to casting, and which exhibits a filling mouth for the staining material (20), closed by a screw or pressure plug (12) which also acts as a confining means for the sparks caused by the combustion

of the fuse (31) connected to the exploding body (3). Going through the shell (1) mouth and closing plug (12) is a thin cord of the pull-operated mechanism (30).

The blasting body (3) may consist, for example, of a small charge (one gram or little more) of gunpowder. It is to be understood, however, that the exploding body may be of any nature. The acoustic effect following the explosion is clearly heard within the range of action of the players.

**[0012]** Said shell (1) may consist of a composite material comprising plastics pellets of so-called "soft air" type, that is, of a type usually used for gas-compressed toy weapons, embedded in a silicone binder. It can also consist of a balsa wood agglomerate, rubber latex, saw dust, paper, cardboard or natural fibres. The shell (1) may also be made of resin.

As far as the staining material (20) inside the shell (1) is concerned, it may be made up of a composite of water and flour which is hot-thickened so as to form a composite denser than water, with the addition of food dyes. Alternatively, the staining material may be a composite including cornstarch, potato flour, gelatines and thickeners in general. The composition of the staining material (20) is however variable at will, also in relation to the visual effect to be obtained. The composite's density is advantageously selected so that, upon the explosion of the body (3) and the consequent fragmentation of the shell (1), thick jets of staining material (20) will be produced intended to properly and efficiently stain the players hit by them.

When giving the command for the explosion, the players within the range of action of the device are hit by both the jets of staining material and the fragments of the shell (1). Accordingly, added to the acoustic and visual effects of the explosion is the impact effect of the staining jets and shell's fragments which hit the players giving them a clear sensation of said impact, with no danger, thanks to the lightness and elasticity of the same fragments. To improve such effect, as is deemed it particularly useful to have the players more involved in the game, the staining composite (20) may be added with charge material comprising solid and lightweight particles (such as pellets of soft air, cork or other light woody substances in granular form, dry legumes, and the like) intended to project outwardly simultaneously to the fragments of the shell (1) and the staining material (20) upon the explosion. As a limit case, the chamber (2) delimited by the shell (1) may be charged solely with material of this type, rather than with staining material. No individual protective gear is required in addition to that normally in use, such as plastics goggles for eyes protection. In fact, the charge of the explosive body (3) is just sufficient to cause the shell (1) to break up and project, within a reduced range, the relevant fragments and the material held in the chamber (2).

**[0013]** Although Fig. 1 shows an apparatus which appears like a hand grenade of a so-called "pineapple" type, the shell (1) may be of any suitable shape and di-

mensions. For example, it may have the shape and dimensions of antipersonnel mine to be laid underground in the area selected for the game. In such case, the control for the explosive body may be fixed by a pressure device of known type instead of a pull means.

**[0014]** The present apparatus may be shaped also as a grenade to be thrown by a mortar or rocket launcher simulator device provided with a launching means (spring-operated, for example) independent of the apparatus according to the present invention - the activation of the explosive body (3) being possibly controlled in any suitable way (for example, by forcing the cord of a pull actuator to go into a guide inside said simulator).

## 15 Claims

1. Apparatus for simulated war games, especially for simulating the effects of an antipersonnel device, characterized in that it consists of a hollow body (1) delimiting a chamber (2) for housing an explosive body (3) and a predetermined amount of staining material (20) and/or a lightweight charge material which is thrown out together with the fragments of the shell (1) because of the very blast of said explosive body (3).
2. Apparatus according to claim 1, characterized in that said shell (1) is of biodegradable material.
3. Apparatus according to claim 1, characterized in that said shell (1) is an agglomerate of wood granules (10).
4. Apparatus according to claim 1, characterized in that said shell (1) is an agglomerate of natural fibres.
5. Apparatus according to claim 1, characterized in that said shell (1) is provided on its outside with a plurality of depressions (11) for controlling the fragmentation.
6. Apparatus according to claim 1, characterized in that said shell (1) is of a composite material comprising plastics pellets embedded in a silicone base.
7. Apparatus according to claim 1, characterized in that the staining material (20) held in said chamber (2) is biodegradable.
8. Apparatus according to claim 1, characterized in that the staining material (20) held in said chamber (2) has a higher density than water.
9. Apparatus according to claim 1, characterized in that the staining material (20) held in said chamber (2) is a composite of vegetable substances with the

addition of food dyes.

10. Apparatus according to claim 1, characterized in  
that said shell (1) is of elastic material.

5

11. Apparatus according to claim 1, characterized in  
that said shell (1) has a non homogenous structure.

10

15

20

25

30

35

40

45

50

55

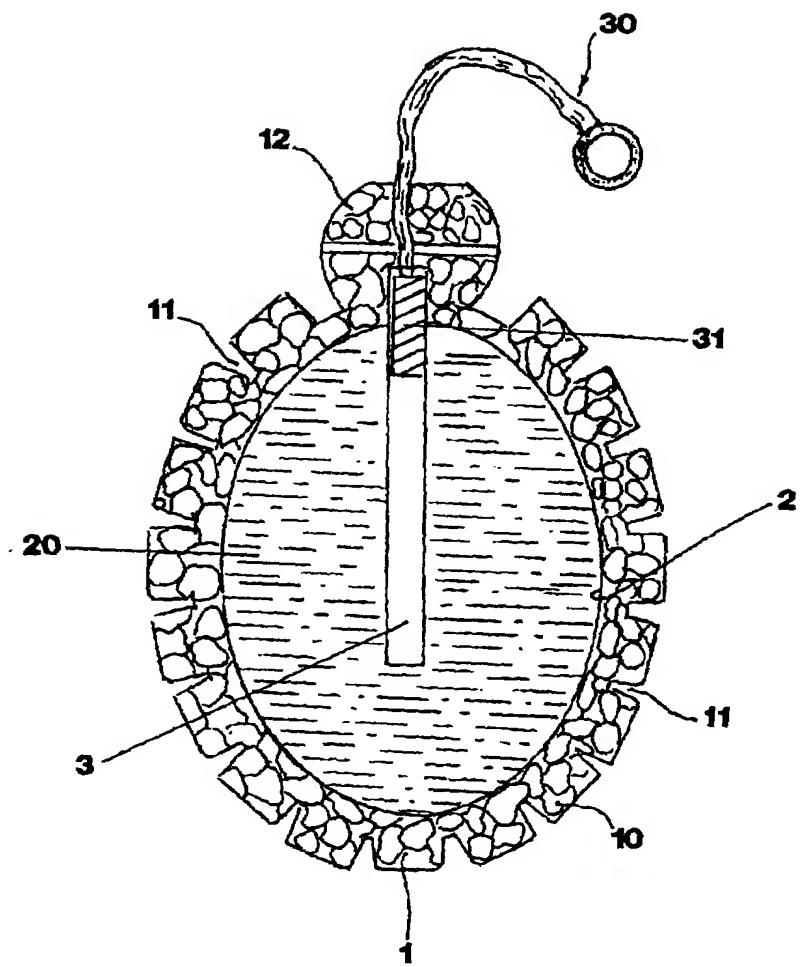


Fig. 1

**DERWENT-ACC-NO:** 1999-621971

**DERWENT-WEEK:** 200207

*COPYRIGHT 2008 DERWENT INFORMATION LTD*

**TITLE:** Hand grenade or mine used to discharge paint to simulate antipersonnel devices in war games

**INVENTOR:** LOMBARDINI M; SAMMICELI A

**PATENT-ASSIGNEE:** LOMBARDINI M [LOMBI] , SAMMICELI A [SAMMI]

**PRIORITY-DATA:** 1998IT-FI0077 (April 1, 1998)

**PATENT-FAMILY:**

<b>PUB-NO</b>	<b>PUB-DATE</b>	<b>LANGUAGE</b>
EP 957330 A2	November 17, 1999	EN
IT 1300654 B	May 23, 2000	IT

**DESIGNATED-STATES:** AL AT BE CH CY DE DK ES FI FR  
GB GR IE IT LI LT LU LV MC MK  
NL PT RO SE SI

**APPLICATION-DATA:**

<b>PUB-NO</b>	<b>APPL-DESCRIPTOR</b>	<b>APPL-NO</b>	<b>APPL- DATE</b>
EP 957330A2	N/A	1999EP- 830181	March 31, 1999
IT 1300654B	N/A	1998IT- FI0077	April 1, 1998

**INT-CL-CURRENT:**

<b>TYPE</b>	<b>IPC DATE</b>
CIPS	F42B12/50 20060101

**ABSTRACTED-PUB-NO:** EP 957330 A2**BASIC-ABSTRACT:**

NOVELTY - The biodegradable shell (10) has fragmentation control grooves (11) around its external surface and is filled with a dense solution of food dyes (20). Inserted into the shell is a detonator (3) which may be activated by pressure or removal of a pin.

USE - To discharge paint to simulate antipersonnel devices in war games

ADVANTAGE - Effect of an antipersonnel device is simulated without risk to the user.

DESCRIPTION OF DRAWING(S) - Section through a grenade

Detonator (3)

Shell (10)

Fragmentation control grooves (11)

Dye solution (20)

**EQUIVALENT-ABSTRACTS:**

**POLYMERS**

Preferred shell: The shell may be made of plastic pellets embedded in a silicone base or an agglomerate of wood granules or natural fibers. The shell is preferably elastic material and has a non-homogenous structure. It is made from biodegradable materials. Depressions for controlling the fragmentation are provided on the outside.

**ORGANIC CHEMISTRY**

Preferred staining material: The staining material has a higher density than water and is a composite of vegetable substances with the addition of food dyes.

**CHOSEN-DRAWING:** Dwg.1/1

**TITLE-TERMS:** HAND GRENADE MINE DISCHARGE PAINT  
SIMULATE DEVICE WAR GAME

**DERWENT-CLASS:** A95 K03 P36 Q79

**CPI-CODES:** A12-F01; K03-A01;

**ENHANCED-POLYMER-INDEXING:** Polymer Index [1.1]  
018 ; P1445\*R F81 Si  
4A;

Polymer Index [1.2]  
018 ; ND01; K9416;  
Q9999 Q9109 Q9052;  
Q9999 Q9201; B9999  
B3021 B3010; Q9999  
Q6791;

Polymer Index [2.1]  
018 ; P0000; S9999  
S1547 S1536;

Polymer Index [2.2]  
018 ; ND01; K9416;  
Q9999 Q9109 Q9052;  
Q9999 Q9201; B9999  
B3021 B3010;

**SECONDARY-ACC-NO:**

**CPI Secondary Accession Numbers:** 1999-181840

**Non-CPI Secondary Accession Numbers:** 1999-458906